

I. NON-PRIOR ART MATTERS REMARKS/ARGUMENTS

- A. The Office Action rejected claims 8-10 under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention.

The Office Action suggested amending claim 8 to add "using a processor (or computer) to perform the steps." Applicant has so amended claim 8 and support for the amendment can be found in the originally filed specification.

- B. Claim suggestions.

The Office Action suggested that claim 10 be amended to proper English grammar. Claim 10 has been so amended.

- C. The Office Action rejected claims 8-10 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As best understood by Applicant (although the first sentence under paragraph 6, page 4, of the Office Action is incomplete), the Examiner has rejected claims 8-10, steps (c) through (e), even though the Office Action states that "it is clear to the Examiner if steps (c) through (e) are in fact tied to a machine or computer to perform these mathematical calculations." The basis for the rejection is apparently that "steps (c) through (e) can be performed manually." However, as suggested by the Examiner, claim 8 has been amended to state expressly "using a processor (or computer) to perform the steps." Therefore, it should be abundantly clear that all steps of the claim are performed by a processor or computer, not manually. Therefore, Applicant believes the rejection now to be moot.

Furthermore, step c) measures a characteristic of the image and can not be performed manually because of the complexity of the measurements, which can only be given a precise mathematical value by a machine. Step d) would require a very long time to do because of the possibility of a deduction among a plurality of intervals. A machine would be able to carry out step e) more rapidly as would be necessary for immediate security clearance as contemplated by this invention.

II. PRIOR ART MATTERS

- A. The Office Action rejected claims 8-13 under 35 U.S.C. 103(a) as being unpatentable over Muramatsu in combination Nysaether, Dennis, and Derakshani. Applicant respectfully traverses the rejection.

The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness.¹ If the Examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of non-obviousness.²

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.³

Applicant respectfully traverses the § 103 rejection because the office action has not established a *prima facie* case of obviousness.

1. The cited prior art does not teach or suggest all the claim limitations.

Claim 8.

None of the references discloses the following elements from claim 8:

- (d) deducing from the particular characteristic thus measured, a range of values for the electrical quantity of the finger judged in principle acceptable using a relationship established between values of a particular characteristic of the image and a range of said values of the electrical quantity of the finger judged acceptable; and
- (e) validation of the living character of the finger when the measured electrical quantity belongs to the deduced range.

¹MPEP Sec. 2142.

²Id.

³Id. (emphasis supplied)

As to element (d), the Examiner admits at pages 6-7, that Nysaether does not expressly teach element (d).

As to element (d), Dennis does not expressly teach deducing, from the particular characteristic thus measured, a range of values for the electrical quantity of the finger judged in principle acceptable using a relationship established between values of a particular characteristic of the image and a range of said values of the electrical quantity of the finger judged acceptable. There is no description that Applicant can find within Dennis of any relationship between a particular measured characteristic of an image of a finger and an electrical quantity of the finger. The Examiner's citation on page 7 of the Office Action (page 6, - page 7, line 12) describes only pulse oximetry to measure pulse rate. This is not a measurement of an electrical quantity of a finger.

Derakshani discloses a method for determining the living character of a finger. The method is based on an image analysis of the finger and the appearance of humidity in the skin pores. The document explains only the analysis of the image, but it does not expressly disclose that this analysis is combined with a measurement of an electrical quantity of the finger and a determination of an acceptable range for values of the electrical quantity deduced from analysis of the image. The Examiner's citations (Step 13, page 386, right column; page 393, Section 6- "Results," paragraph 2, left column and Figure 14) do not expressly disclose elements (d) and (e). The citation to page Step 13, page 386 simply states "13. Make a decision on vitality using a trained neural network using the features described above." The citation to page 393 ("However, since the underlying mechanisms of static and dynamic measures are different, a combination of all those measures provides better precision than any of the individual measures") does not state what "static" and "dynamic" measures were used, and certainly does not refer to deducing a particular range for an electrical quantity of a finger from particular characteristics of an image of the finger using a relationship established by these respective quantities, and then validating the living character of the finger when the measured electrical quantity belongs to the deduced range.

The Examiner has not shown that Murumatsu expressly teaches either element (d) or element (e).

The Office Action has not shown where the prior art expressly teaches:

- (c) measurement of a particular characteristic of the image, said particular characteristic being selected from the group consisting of: the contrast of the image, the average greyscale of the image, the width of the images of the ridges formed by the said fingerprints, and the average greyscale of the ridges.

As discussed in the Amendment and Response mailed October 20, 2008:

In regard to Nysaether, the Office Action mailed January 29, 2008 admitted (page 12, first full paragraph) that Nysaether does not specifically disclose an optical system for taking an image of the fingerprint carried by the finger and for measuring a particular characteristic of the image thus taken nor means for validating the value of the electrical quantity measured if this measurement is situated in the range.

Therefore, the Examiner's rejection of claim 9 (now canceled and incorporated into claim 8) at page 9, first full paragraph, is incorrect because the "image" referred to at paragraph [0033] is not an optical image. The use of the terms "white," "light grey," and "black" in Nysaether refer only to the output of the capacitative sensor described in paragraph [0033] and do not meet the limitation of "taking an image of the fingerprint carried by the finger by means of the optical system."

Because the cited prior art, even if combined, does not disclose all claimed elements, claim 8 is not obvious over the cited prior art. Claim 8 is thus allowable. Claim 9 is canceled. Claim 10 contains additional elements or limitations beyond allowable claim 8 and is also allowable.

The Office Action (page 10) states that "claim 11 stands rejected for the same reasons as stated above at claim 8." Because claim 8 is now allowable, the rejection of claim 11 is also now moot. Claim 12 is canceled. Claim 13 contains additional elements or limitations beyond allowable claim 11 and is also allowable.

- B. The Office Action rejected claim 14 under 35 USC 103(a) as being unpatentable over Murumatsu in combination Nysaether, Dennis, and Derekshani and further in view of Lee. Applicant respectfully traverses the rejection.

The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness.⁴ If the Examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of non-obviousness.⁵

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.⁶

Applicant respectfully traverses the § 103 rejection because the office action has not established a *prima facie* case of obviousness.

The Examiner is referred to the discussion under the 103(a) rejection above for applicant's detailed arguments in regard to Miramatsu, Dennis, Derakshani, and Nysaether.

The Office Action does not state that Lee expressly teaches element (d) or element (e) of claim 11.

Thus, the cited references, even if combined, also do not teach all elements and limitations of claim 14.

1. The Office Action's reasons for making any of the above combinations are insufficient.

The Office Action (p. 12, 3rd full paragraph) states that "all the claimed elements were known in the prior art...." As discussed above, this is not the case. Therefore, one of ordinary skill in the art at the time of the invention would not have been motivated to make the combination.

⁴MPEP Sec. 2142.

⁵ Id.

⁶Id. (emphasis supplied)

2. **The claimed invention produces unexpected results.**

Furthermore, the combination would result in a change in the respective functions of the reference to produce new results not predictable to one of ordinary skill in the art at the time of the invention. The Examiner's statement (page 8) that the combination could have been made by the skilled artisan without change to function and to yield predictable results has not been supported. Specifically, there is no disclosure that elements (d) and (e) of claims 8 and 11 would not result in a change in function or that they would have been predictable.

3. **The combination would defeat the purpose of at least one of the references.**

After discussing the use of capacitive sensors in the art of fingerprint identification, Dennis states:

Such methods and other examples of biometric identification are well known in the art. **However, they are expensive to implement.** (emphasis supplied).

Thus, implementing a combined method or apparatus that uses both optical and electrical fingerprint identification would defeat the purpose of Dennis.

C. New claims 15-18 are allowable over the cited prior art.

New claims 15-18 are allowable over the cited prior art for the reasons given above in regard to claims 8-11.

D. New claims 19 and 20 are allowable over the cited prior art.

The Office Action has not shown that the cited prior art expressly teaches collecting the characteristics of the image together to form a grade between 0 and 1.


This limitation is found in the original Specification at page 5 and therefore does not constitute new matter.

For the above reasons, Applicant respectfully requests the allowance of all claims and the issuance of a Notice of Allowance.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 02-3732.

Respectfully submitted,

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